



Quantified discordant placental echogenicity in TAPS and middle cerebral artery peak systolic velocities

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Objective

To quantify sonographic placental echogenicity in twin anemia-polycythemia sequence (TAPS) and to correlate it with middle cerebral artery peak systolic velocities (MCA-PSV).

Methods

We performed a retrospective search for consecutive TAPS cases between 16 and 36 weeks of gestation (MCA-PSV >1.5 MoM and <1.0 MoM in the anemic donor and polycythemic recipient, respectively) in our database of monochorionic twin gestations from January 2007 until December 2016. In cases, where ultrasound showed the donor's and the recipient's part of the placenta, echogenicity for both twins was quantified by image-processing. MCA-PSV Doppler values of both fetuses were correlated to their respective placental echogenicity. Placental thickness for both twins was also measured.

Results

Out of 756 cases with MCA-PSV measurements, 36 (4.8%) had TAPS, of which 23 had TAPS combined with twin-twin transfusion syndrome (TTTS) and 13 showed isolated TAPS. In 28 women placental echogenicity could be quantified. The mean (\pm SD) placental echogenicity of donor twins was significantly higher than of recipients (138.7 ± 22.8 vs. 77.9 ± 37.0 ; $P < 0.0001$). Furthermore, we found a significant positive correlation between placental echogenicity and MCA-PSV MoM ($R = 0.67$, $P < 0.0001$). The mean placental thickness of donor twins ($n=20$) was significantly higher than of recipients ($49.3 \text{ mm} \pm 13.4$ vs. $25.4 \text{ mm} \pm 10.1$; $P < 0.0001$).

Conclusion

Echogenicity of the placental share for recipient and donor twins correlates with MCA-PSV values. The quantification of sonographic placental echogenicity may help in determining the severity of TAPS in monochorionic twins.